BIMETALLIC CATALYST, METHOD OF POLYMERIZATION AND BIMODAL POLYOLEFINS THEREFROM

ABSTRACT

Bimetallic catalysts, and methods of producing a bimetallic catalyst comprising a modified Ziegler-Natta catalyst and a metallocene are provided, in one embodiment the method including combining: (a) a Ziegler-Natta catalyst comprising a Group 4, 5 or 6 metal halide and/or oxide, optionally including a magnesium compound, with (b) a modifier compound ("modifier"), wherein the modifier compound is a Group 13 alkyl compound, to form a modified Ziegler-Natta catalyst. Also provided is a method of olefin polymerization using the bimetallic catalyst of the invention. The modified Ziegler-Natta catalyst is preferably non-activated, that is, it is unreactive towards olefin polymerization alone. In one embodiment, the molar ratio of the Group 13 metal (of the modifier) to the Group 4, 5 or 6 metal halide and/or oxide is less than 10:1 in one embodiment. The bimetallic catalysts of the present invention are useful in producing bimodal polymers, particularly bimodal polyethylene, having a Polydispersity (Mw/Mn) of from 12 to 50. These bimodal polyolefins are useful in such articles as pipes and films.